



# Oxybenzone (also known as **Benzophenone-3**) is an organic compound

commonly used as an active ingredient in sunscreens and other personal care products. It primarily functions as a UV filter, absorbing ultraviolet light to protect the skin from the harmful effects of sun exposure, including sunburn, premature aging, and an increased risk of skin cancer.

## Chemical Properties of Oxybenzone:

- 1. Chemical Structure:**
  - **IUPAC Name:** (2-Hydroxy-4-methoxyphenyl)phenylmethanone
  - **Chemical Formula:** C<sub>14</sub>H<sub>12</sub>O<sub>3</sub>
  - **Molecular Weight:** 228.24 g/mol
  - **Structure:** Oxybenzone is a benzophenone derivative with a hydroxyl group (-OH) and a methoxy group (-OCH<sub>3</sub>) attached to the benzene rings. The compound's structure allows it to absorb UV radiation effectively.
- 2. Physical Properties:**
  - **Appearance:** Oxybenzone is a pale yellow, crystalline powder.
  - **Solubility:** It is moderately soluble in organic solvents like ethanol and oils and slightly soluble in water.
  - **Melting Point:** Approximately 62-65°C.
  - **Boiling Point:** Decomposes before boiling.
- 3. UV Absorption:**
  - **Maximum Absorption Wavelength (λ<sub>max</sub>):** Around 288 nm. Oxybenzone absorbs both UV-A (320-400 nm) and UV-B (280-320 nm) radiation, making it effective in broad-spectrum sun protection.
- 4. Stability:**

- **Photostability:** Oxybenzone is relatively photostable, meaning it does not significantly degrade when exposed to sunlight. However, its stability can be enhanced when combined with other UV filters and antioxidants.

